RRR000125

Joe Wetch

To: ocrwm.doe.gov

Attachments: YUCCADraft 3. 11 12 07doc.doc

Attn: Dr. Jane Summerson,

Hi, I was disappointed that you and the DOE were no shows at the Lawler Event Center at UNR last night. After struggling through traffic to get there I found someone that informed me that you all had informed them, a couple weeks ago, that you were moving the presentation to the Reno Convention Center. After rushing down there I found it empty after a thorough search. I Faxed you a draft of my comments a couple of weeks ago but received no reply. I'm enclosing my current comments herein. I think the governor and our state-federal elected officials should be awakened to the nation's needs and Nevada's opportunities. The leadlock that they are currently adhearing to is not doing the state or nation any good. It's stupid. There is need for forward looking compromise. I was impressed with you when I met you a year or so ago at Lawler in Reno. If, as a DOE employee, you may have your hands tied I understand. After 50 years of bondage I am now free.

Respectfully yours, Joe Wetch, Retired, Reno

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YUCCA MOUNTAIN: 1st CYCLE SPENT NUCLEAR FUEL STORAGE REPOSITORY

Environmental Impact Statement Review, Reno, Nevada, November 27, 2007
Comments regarding the Yucca Mountain Repository EIS Scoping

By Joseph R. Wetch, Retired w/ 50+yrs

Nuclear Reactor, Energy Systems, High Level Nuclear Waste Sequestration Engineering-Management

Review of the subject EIS suggests that the DOE team at YUCCA MOUNTAIN has done a good job of addressing and formulating a design to implement the poorly formulated scope laid down by Congress nearly 20 years ago. Let us look 20-100 years or a millennia ahead!

YUCCA MOUNTAIN a unique opportunity for NEVADA

Nuclear Power is vital for American National Security and Ecological, Environmental and Economic Survival. Nuclear Power is Essential to the Survival and Sustainability of Human Civilization World Wide. For the First time in the History of the Planet, Human Population has tripled in one person's lifetime (Mine). It only doubled in my grandfather's lifetime. Before him it took over 300 years to double. Before that, it took 1500 years from the time of Christ to double. The incredible multiplication and growth of humanity over the past 150 years has coincided with the increased availability of Energy! Namely, the coal and oil fired steam engine, the oil fed internal combustion engine and oil and gas fired turbines.

Entering WWII in 1940 the US was the world's leading producer and consumer of oil. Today we consume about 25% of world oil but our reserves are down to 3% and natural gas reserves are down to 4%. Our oil imports are about 65% and fast growing. World production is now peaking and rate of production has surpassed discovery rate for several years. As a result, we are starting to limit oil and natural gas use to transportation, heating and to fertilizer and chemical production.

Generation of electricity is possibly our largest and fastest growing energy demand. About 50% of our electric generation is provided by combustion of coal, about 20% by nuclear power plants, about 10% by hydro dams, some 17-18% by oil and natural gas and a few % by "alternative energy sources: wind, solar, geothermal and trash burning.

America is in an oil bind, it uses much more oil and gas than it can produce and the richest oil and gas producer countries have different economic and political agendas than the USA. We are seriously looking toward increased use of electricity for transportation. There are serious environmental concerns regarding introducing a major increase in coal burning, unless we can find an economical way of sequestering and limiting the global distribution of the health or environmental toxins mercury, sulfur, nitrogen oxides, and carbon dioxide with their near infinite half lives..

Mass production is bringing down the installed cost of wind turbines and solar installations. However, it's unpopular to shutdown our factories, refrigerators, cities, trains and lights when the sun doesn't shine and the wind don't blow at the right velocity. These limited "alternative" energy sources can be very beneficial but are not likely to handle our society's base load.

NUCLEAR POWER - ANOTHER LOOK

Nuclear power is unique in its inherent ability to save our environment, ecology, domestic economy and to reduce international tensions. Nuclear power is the only proven source of power that can provide the enormous energy needs of modern industrial and urban society, while remaining totally isolated from the surface of the earth. It need not breathe air nor exhaust to it. It is not vulnerable to weather, tornadoes, clouds, or darkness of night. Its environmental footprint is concentrated and compact by hundreds fold compared to any hydrocarbon, hydro, wind, or solar energy source. It can be the most environmentally clean and healthful source of energy and it can

uniquely be isolated underground for public security and it can be protected from hostile attacks in coming centuries.

Just the 77,000 tonnes of first cycle exposed "spent" fuel commonly known in Nevada as "Nuclear Garbage" can be reprocessed, re-fabricated and "re-burned" in fast breeder reactors multiple times to provide the USA 100% of its base load electric power for about 100 years. The 10 fold larger amount of "Depleted Uranium" from which the exposed fuel was extracted could also be consumed to provide the USA its current total base load electric power needs for the entire millennia. (The US "Base load" is currently about 450,000 megawatts. "Peak load" and total installed electric generating capacity is about double the base load.) All this can be accomplished without any noxious or earth warming gas evolution.

The world's un-mined uranium reserves utilized in the technically feasible closed breeder-actinide burner cycle can provide the developed world all of its base load power for several thousand years. The technology would be capable of utilizing the 3 fold more abundant Thorium resource to provide humanity all of its stationary environmentally clean electric power for some 10,000 years.

Major world powers: Britain, France, Russia, India, and China, have active nuclear fuel reprocessing capabilities. The US does not. Smaller countries such as South Africa, Israel, and possibly Pakistan have curtailed their programs under US pressure. The current unique and myopic US practice of a once thru nuclear fuel cycle uses less than 0.4 of 1% of our uranium resource. Such unique waste limits our domestic nuclear reserves to less than our kid's lifetime and results in dependence upon imports of natural uranium yellow cake from Australia, Canada, and Africa. The absurd policy also produces large volumes of long-lived radioactive spent fuel to be surface stored and cooled in nearly 100 locales for about 30-50 years awaiting controversial long distance transport to a centralized repository across country. Some 85% of the 1st cycle fuel is in the eastern half of the USA. Nuclear power in the US currently produces only 20% of our base-load electricity and conceivably may produce a site thermal overload in the single proposed spent fuel storage repository. Planned shipment of all of the nation's spent fuel and high level rad-waste to the single remote Nevada repository near Los Vegas has met with considerable public resistance.

SECURE UNDERGROUND REGIONAL NUCLEAR ENERGY CENTERS (SURNEC)-- W/NUCLEAR FUEL RECYCLE

Modern US "Energy" and Mining industry seismology, geology, excavation, mining, tunneling, and ventilation, coupled with modern 21st century remote-controlled, robotic and automated operation and with state-of-art remote maintenance capabilities provide the technological opportunity for domestic US Industry, capital, labor and nuclear and chemical technologists to safely, economically and securely close the nuclear fuel cycle in a completely sequestered underground environment.

The US public should demand government and industry increased policy consideration be given now to facilitate immediate renewal of the education, research, development, design needed to enable the licensing of 10 to 20 regional, fully contained, deep underground or mountain, nuclear energy centers. Each center may provide up to 10 to 20 thousand Megawatts of base load electric generation within the next 20 to 40 years. Each park would include modern Fast Breeder, Thorium Converter and Actinide Burner reactors with new compact, non-aqueous molten salt or gaseous fuel reprocessing.

All fuel re-enrichment, re-fabrication, and reloading into the Fast Breeder-converters and Actinide reduction Fast Reactors can and should be done with state-of-the-art onsite shielded remote handling equipment. The *long-lived low level* radioactivity, and sufficient short lived (*gamma hot radioactivity)* will remain in the fuel to circumvent the possibility of Plutonium theft or proliferation.

Power generation facilities and the short-lived fission product separation, immobilization and isolation will all be incorporated onsite. Any obsolescent reactor at end of life, with its relatively short-lived activity, may simply be de-fueled, closed-off, and allowed to decay to normal background and be abandoned or recycled in-place in its private underground vault. Excess separated shorter-lived fission products may be immobilized and interned for decay to natural background within on-site repositories - *each with less than 1% the volume, heat and decay life currently planned for once exposed fuel "wastes" to be sent across the USA to YUCCA Mountain in Nevada.*

Some 14 to 17 Gen III "thermal neutron" water and gas cooled reactors are currently being considered for construction licensing, mostly at existing eastern reactor sites. It would be a step in the right direction to locate them as initial tenants within initial SURNEC sites.

ADVANTAGES OF "SECURE UNDERGROUND REGIONAL NUCLEAR ENERGY CENTERS"----(SURNEC)

Fast neutron breeder reactors, thorium converters and compact fuel reprocessing and re-fabrication are the enabling multipliers that provide for *Renewable Nuclear Energy Reserves.* SURNEC can effectively prevent the future diversion of fissionable material to weapons use. In current foreign and past US practice, in order to expedite easier and safer shipping and handling, fissionable weapons material is separated from radioactivity and decontaminated. This was done to facilitate off-site shipping *from centralized facilities to* dispersed reactors, fuel and weapons fabrication facilities and deployment to military organizations. *POOR IDEA FOR CURRENT AND FUTURE POLICY!*

In the proposed fully contained energy parks, *all facilities can and* will be *designed and built* to limit fissionable material enrichment to reduced levels suitable for reactor fuel only. That action, and retaining the long lived trans-uranic nuclides and gamma hot fission products in the fuel, will destroy the potential for diversion to weapons use. Reprocessing and re-fabrication of fuel and reinstallation into Fast neutron reactors for further burning can be accomplished with *high gamma active fission products and long half life actinides incorporated into the fuel.* The long-lived radioactive isotopes would shutdown current Thermal reactors, but can be incorporated into Fast reactors and converted to short-lived nuclides. This '*Fissium*' fuel has been demonstrated by Argonne National Laboratory personnel who successfully installed and operated it in the Experimental Breeder Reactor in Idaho. Work at Los Alamos, and at the Kurchatov Institute in Moscow, also confirm that much of the long-lived radionuclides can be converted to short lived nuclides in Fast reactors.

These processes can all be automated and maintained using modern fully shielded, reliable, remotely operated and maintained equipment. The facilities can be designed built and maintained to handle highly radioactive fuel that is entirely unsuitable for theft or for off-site shipping and handling.

(Sophisticated shielded shipping casks, major facility modification and a very large long term and sophisticated invasion and occupation force would be required to affect any Pu theft.)

The current public apprehensions concerning the establishment of geological repositories for sequestering spent fuel for multi millennia can be substantially alleviated. The late 1970s Administration prohibition of fuel reprocessing is out of date with modern technology and circumstances. The 10-20 proposed US subterranean energy centers would be monitored and defended far more effectively for the coming centuries than can be the existing *104 US and 433 Worldwide* nuclear power surface sites. (*Sixty-nine additional reactors are now being planned or built world wide not including the US).* *---14min*

ARE WE THERE YET?? NO! We made some early tries ! We didn't complete. We weren't ready 50 years ago..

In response to President Eisenhower's call for an "Atoms for Peace" nuclear electric power development in the 1950s, much of the commercial and national laboratory nuclear industry turned its attention toward high yield advanced molten salt fueled and solid fueled liquid metal cooled fast reactors with high breeding ratios. Although some early tries were made, the technology and required engineering sophistication were not yet ready. The pressure and rush for commercial nuclear power by the late 50s and early 60s, and utility industry financial risk aversion, led to adapting the Navy's further developed reactor technology. Major specifications and suppliers were already proven and qualified in the Pressurized Water Reactor (PWR) Navy program.

This shift drew technical talent and financial resources away from "advanced" reactor work. This, followed by President Carter's decree in the late 70's to curtail US fuel reprocessing brought a near shut down of "advanced" fuel recycle reactor work in the USA. Finally, shutdown of the Fast Flux Test Facility (FFTF) at Hanford Washington in the mid 1990s ended fast reactor development in the USA. France, Russia, India and Japan continued developing first generation fast reactors and a few dedicated DOE researchers at Argonne, Idaho, and Los Alamos national laboratories have maintained some progress notably in "pyro" reprocessing and in long lived Actinide isotope destruction reactor studies] 2 end

Fax Cover Sheet

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November 28, 2007

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